



PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: EDUARD BRÜCK - 1 (PCT)
SERIAL NO.: 09/601,846 EXAMINER: K.H. TRAN
FILED: SEPTEMBER 19, 2000 GROUP: 3634
TITLE: INTERNAL ELEMENT FOR A DOOR

DECLARATION UNDER 37 CFR 1.132

MAIL STOP AMENDMENT
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Johannes Hysky, hereby declare as follows:

1. I am the Vice President of Research & Development and the Managing Director of the assignee, namely Carcoustics Tech Center GmbH, of the invention entitled "Internal Element for a Door", which invention is described and claimed in U.S. Patent Application Serial No. 09/601,846 filed September 19, 2000. Carcoustics Tech Center GmbH has its principal place of business at Neuenkamp 8, 51381 Leverkusen, Germany.

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2. I have obtained a degree as professional engineer in the field of mechanical engineering. I have been working in the field of acoustics concerning motor vehicles since October 1989.

3. I submit this Declaration in support of the patentability of the invention described and claimed in the above referenced patent application.

4. The present invention relates to a door internal element for motor vehicle doors which serves as a support element for several functional parts and their securing elements (see in particular FIGS. 1, 4-10 and the associated description). The functional parts are e.g. a loudspeaker (32); an electric motor (37) of a window regulator; an electric cable (18) mounted in cable holder (17); and other parts. In addition, the door internal element according to the present invention serves as a vapor barrier in order to prevent water vapor from migrating from the door cavity into the passenger compartment.

5. In the prior art, a door internal element is usually made of sheet steel. The use of sheet steel makes such supports fairly heavy. Moreover, the forming options of sheet steel are

limited. Alternatively, door internal elements made of plastic material, in particular of glass fiber reinforced plastic materials have been used as supports for door compartments. However, apart from a reduction in weight, these door internal elements are unsatisfactory with respect to the acoustic function, because they do not have significant sound insulation or damping properties. The conventional door internal elements are also unsatisfactory in terms of providing a water barrier. To compensate for deficiencies of this nature, these known door internal elements are provided with additional elements such as watertight film or foil and a sound damping sheet.

6. The door internal element according to the present invention is a support element to be arranged between a door outer side and an inner lining (i.e. a decorative trim panel). The door internal element has two solid boundary zones and a foamed, porous core zone, wherein these zones are zones of one single body produced by a single foaming process, i.e.- a modified injection molding process. Moreover, the door internal element according to the invention comprises a sealing body which is disposed at an edge of the door internal element. The sealing body (12) preferably is formed like a bead which runs as

a closed ring along the edge (11) of the door internal element (see FIGS. 2 and 13 and page 16, third paragraph).

7. The single foaming process used for producing the door internal element according to the present invention produces a novel door internal element having improved physical characteristics with respect to sound insulation and damping properties, and flexural strength combined with reduced weight and cost efficiency.

8. In comparison with conventional door internal elements made of plastic materials and used as supports for door components, the door internal element according to the present invention has considerably improved sound insulation and damping characteristics due to its foamed, porous core zone. At the same time, the door internal element according to the invention has a considerably improved flexural strength in comparison with a conventional door internal element having the same weight as the door internal element according to the invention.

9. These new and unique characteristics of the door internal element according to the invention are particularly achieved in comparison with conventional door internal elements

made of sheet steel. The door internal element according to the present invention is usually thicker than the door internal element made of sheet steel; however, it has the same or even a better flexural strength. It is much lighter and more efficient with respect to the acoustic function.

10. The door internal element according to the invention can be produced more cost-effective than prior art laminates. The handling and bonding of different material layers requires more time and higher costs. In comparison with the door internal element according to the invention, the required adhesive for bonding the layers to each other causes a higher weight.

11. The transition to a door structural part which supports the door internal element, e.g. a frame-like door interior sheet metal, is very well implemented, and that also in terms of the sealing function, by the sealing body disposed on the edge of the door internal element.


12. Thus, support function, acoustic function and sealing function are combined in a single body of considerably reduced weight. For a given weight the door internal element according

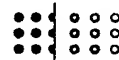
to the invention is stiffer than conventional door internal elements made of plastic material.

13. I further declare that all the statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereto.

Date: 04/10/04

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